



Subject card

Subject name and code	SPATIAL ECONOMETRICS - A TEAM PROJECT, PG_00060798						
Field of study	Economic Analytics						
Date of commencement of studies	October 2023	Academic year of realisation of subject			2023/2024		
Education level	second-cycle studies	Subject group			Obligatory subject group in the field of study Subject group related to scientific research in the field of study		
Mode of study	Full-time studies	Mode of delivery			at the university		
Year of study	1	Language of instruction			English		
Semester of study	2	ECTS credits			4.0		
Learning profile	general academic profile	Assessment form			exam		
Conducting unit	Katedra Statystyki i Ekonometrii -> Faculty of Management and Economics						
Name and surname of lecturer (lecturers)	Subject supervisor	dr hab. Michał Pietrzak					
	Teachers	dr hab. Michał Pietrzak					
Lesson types and methods of instruction	Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
	Number of study hours	15.0	0.0	30.0	0.0	0.0	45
	E-learning hours included: 0.0						
Learning activity and number of study hours	Learning activity	Participation in didactic classes included in study plan	Participation in consultation hours		Self-study		SUM
	Number of study hours	45	10.0		45.0		100
Subject objectives	Analyzes socio-economic phenomena using spatial data, creating innovative solutions to complex problems as a team.						
Learning outcomes	Course outcome		Subject outcome			Method of verification	
	[K7_U05] cooperates with other people in the implementation of teamwork, both as a leader and a team member, effectively achieving the assumed goals		performs analytical work demonstrating the ability to work in a team			[SU3] Assessment of ability to use knowledge gained from the subject	
	[K7_W02] explains the meaning and interdependence of the key components describing economic processes, using in-depth knowledge consistent with the main trends in the development of scientific disciplines related to the field of study		identifies interactions in space between variables describing socio-economic phenomena, using knowledge consistent with the main trends in the development of econometric research			[SW1] Assessment of factual knowledge	
	[K7_U01] creates innovative solutions to complex and unstructured problems, taking into account the variability of the environment by synthesising information from many sources		creates innovative solutions to complex and unstructured problems by adapting the methods used to the nature of the analyzed economic phenomena by synthesizing information from many sources			[SU4] Assessment of ability to use methods and tools	

Subject contents	<p>I. Spatial data analysis</p> <p>II. Inference and spatial data</p> <p>III. Spatial statistics; spatial econometrics: initial motivations</p> <p>IV. Spatial and temporal autocorrelation</p> <p>V. Mutual influence of cross-sectional observations; Graphs of relationships between cross-sectional observations</p> <p>VI. Tests of spatial autocorrelation, model specification</p> <p>VII. Spatial autoregressive models: conditional (CAR) and simultaneous (SAR)</p> <p>VIII. Estimation of spatial autoregressive models: methods (GMM, ML, Bayesian)</p> <p>IX. Eigenvectors and eigenvalues of graphs of relationships between cross-sectional observations</p> <p>X. No orthogonality between regression and autoregression coefficients</p> <p>XI. Prediction and spatial models</p> <p>XII. Spatial panel models</p> <p>XIII. Models LMM, GLMM, GAM, spatial limited dependent variable models</p> <p>XIV. Multi-level spatial models</p>											
Prerequisites and co-requisites	Knowledge of the subjects Statistics and Econometrics.											
Assessment methods and criteria	<table border="1" data-bbox="448 1285 1477 1391"> <thead> <tr> <th data-bbox="448 1285 794 1317">Subject passing criteria</th> <th data-bbox="794 1285 1141 1317">Passing threshold</th> <th data-bbox="1141 1285 1477 1317">Percentage of the final grade</th> </tr> </thead> <tbody> <tr> <td data-bbox="448 1317 794 1348">Project and written test</td> <td data-bbox="794 1317 1141 1348">55.0%</td> <td data-bbox="1141 1317 1477 1348">60.0%</td> </tr> <tr> <td data-bbox="448 1348 794 1391">Exam</td> <td data-bbox="794 1348 1141 1391">55.0%</td> <td data-bbox="1141 1348 1477 1391">40.0%</td> </tr> </tbody> </table>			Subject passing criteria	Passing threshold	Percentage of the final grade	Project and written test	55.0%	60.0%	Exam	55.0%	40.0%
Subject passing criteria	Passing threshold	Percentage of the final grade										
Project and written test	55.0%	60.0%										
Exam	55.0%	40.0%										
Recommended reading	Basic literature	Kopczewska K., Ekonometria i Statystyka przestrzenna z wykorzystaniem programu R Cran, Wyd. CeDeWu Warszawa 2007 Suchecki B. red. nauk., Ekonometria przestrzenna. Metody i modele, analizy danych przestrzennych, Wyd. C.H.Beck, Warszawa 2010 Suchecki B. red. nauk., Ekonometria przestrzenna II. Modele zaawansowane, Wyd. C.H.Beck, Warszawa 2012										
	Supplementary literature	Baltagi B.H., Econometric Analysis of Panel Data, 5th ed, Wiley, Chichester 2014 Suchecka J. red.nauk., Statystyka przestrzenna. Metody analizy struktur przestrzennych, Wyd. C.H.Beck, Warszawa 2014										
	eResources addresses	Adresy na platformie eNauczanie: Spatial_econometrics_2023_2024 - Moodle ID: 36334 https://enauczanie.pg.edu.pl/moodle/course/view.php?id=36334										
Example issues/ example questions/ tasks being completed	Based on the spatial data of the Central Statistical Office, conduct an analysis of the location and concentration of the number of employees by sectors and voivodeships from the selected year.											
Work placement	Not applicable											